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Abstract

Background: Research on predictors of birth outcomes tends to focus on maternal characteristics. Less is known about the role of paternal factors. Missing paternal data on administrative records may be a marker for risk of adverse birth outcomes.

Data and methods: Analyses were performed on a cohort of births that occurred from May 16, 2004 through May 15, 2006, which was created by linking birth and death registration data with the 2006 Canadian census. Log-binomial and binomial regression were used to estimate relative risks and risk differences for preterm birth, small-for-gestational-age birth, stillbirth and infant mortality associated with the absence of paternal information. Analyses controlled for maternal age, education, household income, parity, marital status, ethnicity and birthplace.

Results: The analyses pertained to 131,285 singleton births. Paternal data were missing from the birth registration for 7,461 births (4.6%) and from the census data for 17,713 births (11.4%). The adjusted relative risks associated with missing paternal data on the birth registration were 1.12 (95% CI: 0.99, 1.26) for preterm birth; 1.15 (1.05, 1.26) for small-for-gestational-age birth; 1.86 (1.27, 2.73) for stillbirth; and 1.53 (1.00, 2.34) for infant mortality. Estimates were robust to varying definitions of missing paternal information, based on the birth registration, census data, or both.

Interpretation: This study suggests that missing paternal data is a marker for increased risk of adverse birth outcomes, over and above maternal characteristics.

Key words: Birth certificates, fetal death, infant mortality, medical record linkage, premature infant, small-for-gestational-age infant, stillbirth

In recent decades, the focus of perinatal research has extended beyond biomedical risk factors[1,2] to include psychosocial variables,[3-6] families and communities, and the role of paternal characteristics.[7-9] However, as the range of factors investigated expands, so does the amount of missing data, a situation that could adversely affect analyses.

Missing paternal information at the time of birth or during infancy is more common than missing maternal data. This does not simply represent an inadequate or unsuccessful attempt by researchers to capture exposure data. Rather, it may offer important clues about the emergency nature of the hospital admission and the psychosocial environment in which children begin their lives. The absence of paternal data has been associated with adverse birth outcomes[10,11] and may be a marker for pregnancies at elevated risk.

Although studies of paternal factors and birth outcomes may be biased by missing data,[12] few have systematically explored the causes and implications. As well, researchers have tended to look at paternal data only on birth registrations,[10,11,13,14] and are, therefore, restricted in their ability to assess paternal involvement after birth.

To overcome these limitations, the present study examined not only birth and death registration data, but also, census data. The objective was to compare rates of preterm birth, small-for-gestational-age birth, stillbirth and infant mortality, based on the presence or absence of paternal data on the birth registration and in census results, while controlling for maternal characteristics.

Data and methods

Analyses were performed on all singleton births from the 2006 Canadian Birth-Census Cohort—a cohort of births that occurred from May 16, 2004 through May 15, 2006 that was created by linking birth/infant death registration data with the 20% sample of the population who completed the 2006 census long form. Details about the creation of this cohort have been published.[15]

For the principal analyses, "missing paternal data" was defined as a birth without a father identified on the birth registration ("No father on birth registration"). To develop a more comprehensive understanding of the nature of missing paternal information in the Canadian Birth-Census dataset, three other definitions were examined: (1) "Unlinked"—records for which no link to a father could be established between the birth registration and the census data through the automatic linking algorithm or through the subsequent manual review (regardless of whether a birth father was listed on the birth registration); (2) "Unlinked/Unsure of link"—records for which no link to a father was established through the automatic linking algorithm, even if a likely birth father was found in the census data during the subsequent manual review (again, unrelated to whether a birth father was listed on the birth registration); and (3) "Doubly missing"—records with no father identified on the birth registration and also having no link to a father in the census data. For "No father on birth registration," "Unlinked," and "Unlinked/Unsure of link," the reference group was all births that were not missing paternal data. For "Doubly missing," the reference group was births with paternal data on the birth registration and a link to census data, while those "Singly missing" (unlinked or no father on the birth registration, but not both) were excluded.

Maternal characteristics and rates of adverse birth outcomes were compared between births with and without paternal data on the birth registration. In addition, for the two "Singly missing" subgroups, paternal characteristics (age and education) from the other data source were examined, and their bivariate associations with adverse birth outcomes were determined.

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For the principal analyses, log-binomial regression was used to estimate relative risks (RRs) and 95% confidence intervals (CIs) for adverse outcomes (preterm birth, small-for-gestational-age birth, stillbirth, and infant mortality) associated with missing paternal data. Binomial regression was used to estimate risk differences (RDs) and associated 95% CIs.[16] Analyses controlled for maternal age, education, household income quintile, marital status, parity, ethnicity and country of birth. Data on age, marital status and country of birth were obtained from birth registration data; information for the other covariates was from the census. Regression analyses were performed using the loglink procedure in SUDAAN with bootstrap weights to account for the census sampling design and the linkage rates of the Canadian Birth-Census Cohort.

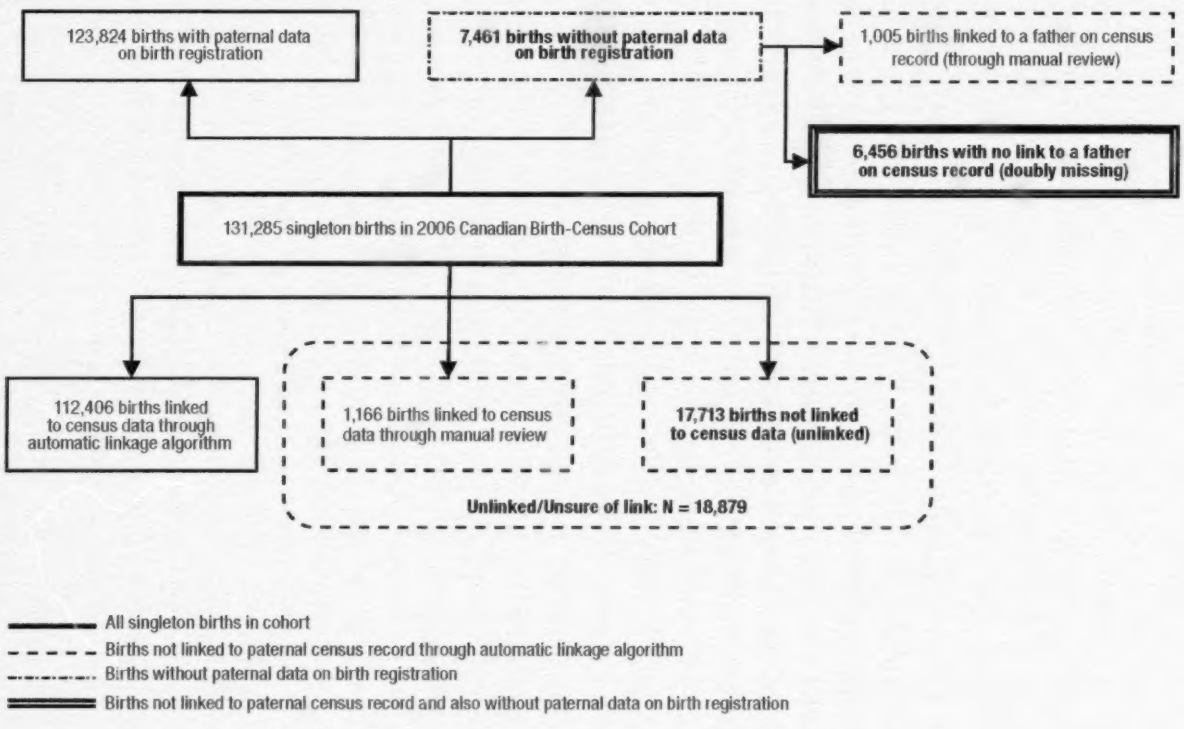
Regression coefficients for marital status were examined to compare the strength of associations with adverse outcomes for births missing paternal data versus for being unmarried. As a sensitivity analysis, models were run based on dichotomized maternal demographic variables (age, education, household income quintile, Indigenous origin, birthplace and marital status) using the "No father on birth registration" definition of missing. Analyses were also performed to compare births in Quebec (which has different regulations for listing paternal data on birth registrations) with those in the rest of Canada. Finally, to investigate effects of the lag time between the birth and the census, analyses using the "Unlinked" definition of "missing" were performed with the cohort split into births before May 16, 2005 (who would be older than age 1 at the time of the census) and births on or after May 16, 2005 (who would be younger than age 1 at the time of the census).

Results

Of the 131,285 singleton births included in the analyses, paternal data were missing from the birth registration for 7,461 (weighted percentage = 4.6%); 17,713 births (11.4%) were missing paternal data according to the "Unlinked" definition; 18,879 (12.4%) met the "Unlinked/Unsure of link" definition; and 6,456 (4.0%) were "Doubly missing" paternal data (Figure 1).

Missing paternal information from the birth registration was associated with every maternal characteristic examined, as well as with each of the four adverse birth outcomes (Table 1). As well, the relative risk (RR) for each adverse

Figure 1
Patterns of missing paternal data, singleton births, 2006 Canadian Birth-Census Cohort


123,824 births with paternal data on birth registration
7,461 births without paternal data on birth registration
1,005 births linked to a father on census record (through manual review)
6,456 births with no link to a father on census record (doubly missing)
131,285 singleton births in 2006 Canadian Birth-Census Cohort
112,406 births linked to census data through automatic linkage algorithm
1,166 births linked to census data through manual review
17,713 births not linked to census data (unlinked)
Unlinked/Unsure of link: N = 18,879
All singleton births in cohort
Births not linked to paternal census record through automatic linkage algorithm
Births without paternal data on birth registration
Births not linked to paternal census record and also without paternal data on birth registration

Note: Text in **bold** refers to the four definitions of missing examined in analyses.
Source: 2006 Canadian Birth-Census Cohort Database.

outcome was elevated across the definitions of missing paternal data (from birth registrations, from census data, or from both) (Figure 2). Effect estimates were relatively minor for preterm birth and small-for-gestational age birth (RRs 1.1 to 1.2) and somewhat larger for stillbirth and infant death (RRs 1.5 to 2.1). The risk differences (RDs) for adverse birth outcomes associated with missing paternal data were consistent with relative risk estimates (Figure 3). The adjusted RDs suggest that for preterm birth and small-for-gestational-age birth, missing paternal information was associated with roughly one additional adverse event per hundred births.

Results of the principal sensitivity analyses are presented in Tables 2 and 3. While paternal data were more frequently missing for women in higher-risk demographic groups, RRs and RDs tended to be greater in lower-risk groups—women aged 25 or older, women with higher levels of education or household income, and women who were not Indigenous. Nonetheless, confidence intervals largely overlapped.

The adjusted RRs for adverse outcomes associated with missing paternal data were comparable to those for being unmarried (data not shown in tables): 1.12 and 1.15, respectively, for preterm birth; 1.15 and 1.25 for small-for-gestational-age birth; 1.86 and 1.25 for stillbirth; and 1.53 and 1.46 for infant death.

Associations with preterm birth and small-for-gestational-age birth were not substantially different in Quebec and in the rest of Canada (data not shown in tables). For Quebec births, RRs for missing paternal data on the birth registration were 1.39 (95% CI = 1.06, 1.82) for preterm birth and 1.19 (0.93, 1.53) for small-for-gestational-age birth. By contrast, associations between missing paternal data and stillbirth and infant mortality were stronger in Quebec than in the rest of Canada; the RRs for Quebec births were 5.37 (1.23, 23.43) for stillbirth and 2.44 (1.00, 5.93) for infant mortality.

Table 1
Characteristics of mother and outcomes of singleton births in 2006 Canadian Birth-Census Cohort, all singleton births and births without paternal data on birth registration

	All singleton births				Paternal data missing from birth registration			
			95% confidence interval				95% confidence interval	
Maternal characteristics and outcomes of birth	Unweighted number	Weighted %	from	to	Unweighted number	Weighted %	from	to
Total	**131,285**	**100.0**	...	...	**7,461**	**100.0**	...	...
Maternal age (years)								
Younger than 25	28,651	20.5	20.4	20.6	4,051	54.4	53.1	55.6
25 to less than 30	40,251	31.0	30.8	31.1	1,682	21.6	20.6	22.7
30 to less than 35	40,179	31.3	31.2	31.4	996	13.6	12.7	14.5
35 or older	22,160	17.2	17.1	17.3	729	10.4	9.7	11.2
Missing	x	x	x	x	x	x	x	x
Maternal education								
Less than secondary graduation	22,856	13.3	13.0	13.5	3,552	38.8	37.5	40.2
Secondary graduation	27,609	21.9	21.6	22.1	1,759	27.9	26.7	29.2
Postsecondary diploma/certificate	43,446	34.9	34.6	35.2	1,502	23.3	22.2	24.5
University degree or higher	35,670	29.1	28.9	29.4	429	7.4	6.7	8.2
Missing	1,704	0.9	0.8	0.9	219	2.6	2.2	3.0
Maternal marital status								
Single	35,284	24.4	24.2	24.7	5,362	69.4	68.2	70.6
Married	80,200	63.9	63.6	64.2	599	10.0	9.3	10.9
Widowed/Divorced/Separated	1,855	1.4	1.3	1.5	240	3.4	2.9	4.0
Missing	13,946	10.3	10.1	10.5	1,260	17.1	16.1	18.2
Parity								
0	56,796	46.0	45.7	46.3	3,504	56.2	54.8	57.6
1	44,732	34.8	34.6	35.1	1,674	22.9	21.7	24.1
More than 1	28,832	18.9	18.7	19.2	1,867	19.0	18.0	20.1
Missing	925	0.3	0.3	0.3	416	2.0	1.7	2.2
Maternal ethnicity								
Not visible minority	88,082	72.7	72.4	73.0	3,014	57.6	56.0	59.2
Visible minority (excluding Indigenous)	24,030	20.6	20.4	20.9	884	17.6	16.5	18.8
Indigenous	17,547	5.9	5.6	6.2	3,364	22.4	21.1	23.8
Missing	1,626	0.8	0.8	0.9	199	2.3	2.0	2.8
Maternal birthplace								
Canada	101,270	74.7	74.5	75.0	6,478	81.7	80.5	82.8
Not Canada	28,222	23.9	23.6	24.1	732	14.1	13.1	15.2
Missing	1,793	1.4	1.4	1.5	251	4.3	3.8	4.9
Household income quintile								
1 (lowest)	26,389	19.0	18.8	19.3	3,069	46.2	44.9	47.6
2	26,176	19.8	19.6	20.0	1,632	20.0	18.9	21.2
3	26,172	20.1	19.9	20.4	1,105	13.5	12.6	14.4
4	26,273	20.5	20.3	20.8	910	11.0	10.2	12.0
5 (highest)	26,275	20.5	20.3	20.7	745	9.3	8.5	10.1
Preterm birth (before 37 weeks)								
Yes	8,933	6.9	6.7	7.0	769	10.5	9.7	11.4
No	122,100	93.1	93.0	93.3	6,665	89.5	88.6	90.3
Small-for-gestational-age birth								
Yes	10,478	8.6	8.4	8.7	788	12.2	11.3	13.1
No	120,698	91.4	91.3	91.6	6,661	87.8	86.9	88.7
Stillbirth								
Yes	753	0.6	0.6	0.6	187	3.2	2.8	3.7
No	130,532	99.4	99.4	99.4	7,274	96.8	96.3	97.2
Infant death								
Yes	545	0.5	0.5	0.5	76	1.0	0.8	1.4
No	129,987	99.5	99.5	99.5	7,198	99.0	98.6	99.2

... not applicable
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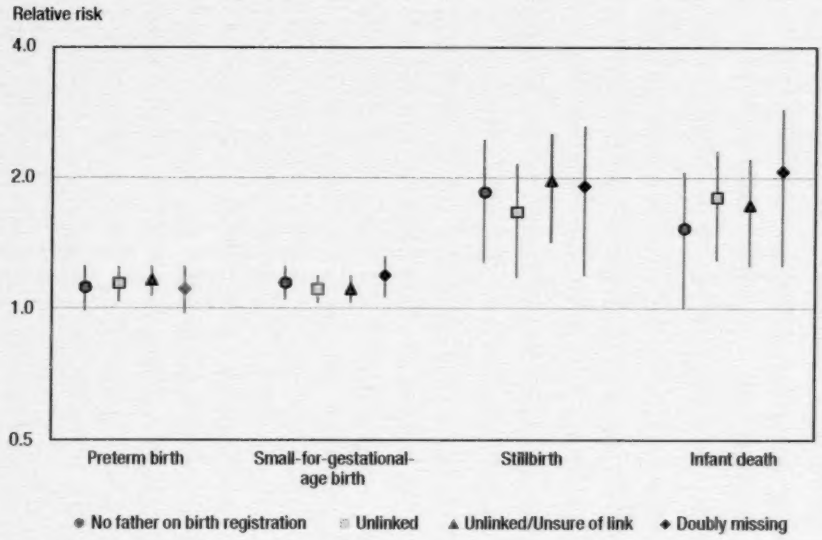
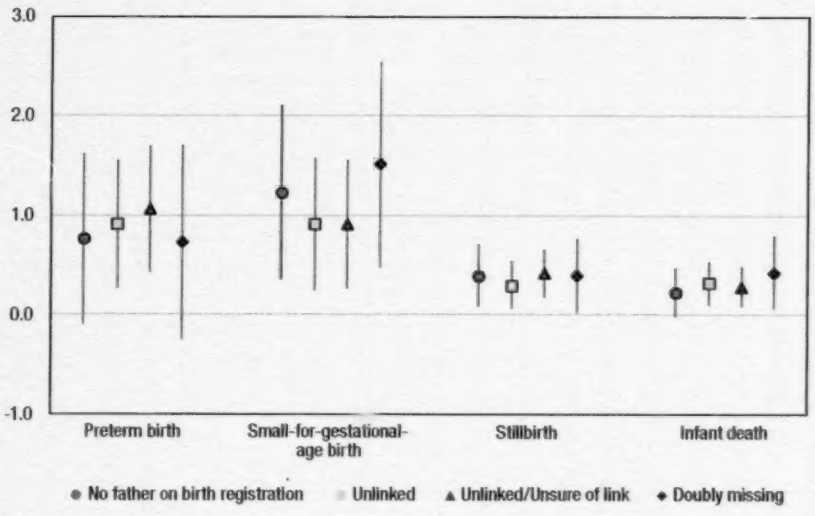
Source: 2006 Canadian Birth-Census Cohort Database.

Figure 2
Adjusted relative risk of adverse birth outcomes, by definition of missing paternal data, 2006 Canadian Birth-Census Cohort



I = 95% confidence interval
Note: Adjusted for maternal age, education, household income quintile, ethnicity, birthplace, marital status and parity.
Source: 2006 Canadian Birth-Census Cohort Database.

Figure 3
Adjusted risk difference per 100 events for adverse birth outcomes, by definition of missing paternal data, 2006 Canadian Birth-Census Cohort



I = 95% confidence interval
Note: Adjusted for maternal age, education, household income quintile, ethnicity, birthplace, marital status and parity.
Source: 2006 Canadian Birth-Census Cohort Database.

Births in the sample were evenly distributed across the two years from May 16, 2004 to May 15, 2006. Rates of missing paternal data and adverse birth outcomes were similar for births that occurred less than a year before the census, and for those that occurred at least one year before the census. For preterm birth and small-for-gestational-age birth, associations with missing paternal data did not differ between the two groups (data not shown in tables). However, associations with stillbirth and infant death were stronger for births that occurred less than a year before the census (RR = 2.08; 1.25, 3.45 and RR = 2.30; 1.47, 3.59, respectively) than for births that occurred at least one year before the census (RR = 1.35; 0.82, 2.23 and RR = 1.32; 0.77, 2.28).

Discussion

This examination of singleton births in a randomly selected 20% of the Canadian population showed modest associations between missing paternal information and four adverse birth outcomes. Findings from several American studies[10,11,13] that used the birth registration criterion to define "missing" have been comparable, and similar results were reported for the province of Quebec.[14] A study from one medical centre in the United States found elevated rates of low birthweight among births missing paternal information, but the difference did not persist after adjustment for maternal characteristics.[17]

Missing paternal information is often considered a proxy for low paternal involvement in pregnancy and/or childrearing.[11,13,18] On the birth registration, missing paternal data likely exhibits high sensitivity for absence of the father, but specificity may be lower owing to cases where data are missing for a father who is present. However, in this study, results for preterm birth, small-for-gestational-age birth, and stillbirth were largely consistent across the different definitions of "missing" (from birth registration,

from census data, or from both). The consistency of the estimates between the "doubly missing" definition and the less stringent definitions suggests that missing data from the birth registration or from census results most often reflects absence of the father. The association between doubly missing paternal data and infant death indicates the relevance of the mother's partner from birth on—the doubly missing category is likely to have the highest sensitivity and specificity in identifying mothers without a partner.

The presence of paternal information in administrative data may be a better indicator of parental support than is marital status measured after the child's birth.[19] The Quebec study found that rates of adverse birth outcomes were highest for single mothers with no paternal information, followed by single mothers with paternal data and women in common-law unions; married women were least likely to have adverse birth outcomes.[14] In the present analysis, the adjusted relative risks of adverse birth outcomes associated with missing paternal data were similar to those for being unmarried. However, even after adjustment for marital status, missing paternal information was associated with adverse outcomes, which suggests that these two variables represent different risk factors.

Tan et al. reported that pregnancies missing paternal data had higher levels of medical and demographic risk factors.[10] Similarly, the present study found that mothers with missing paternal data tended to be in high-risk groups. Tan et al. proposed that the relationships between missing paternal data and birth outcomes were largely related to socioeconomic risk factors, but their analysis did not report adjusted results. In the present study, adjustments for demographic covariates did, indeed, attenuate associations—by 21% to 33% from unadjusted risk ratios for all outcomes except stillbirth; the association for stillbirth was attenuated by 73% (crude RR = 6.94; adjusted RR = 1.86).

The absence of paternal information from the birth registration was related to paternal characteristics reported to the census. Education tended to be lower for fathers not on the birth registration than for those who were. Fathers at the extremes of the age range (younger than 25 or older than 35, based on the census) were less likely than those aged 25 to 35 to appear on birth registrations. For birth registrations with paternal data, younger fathers (as indicated on the birth registration) were less likely to be linked to census data.

These characteristics were, in turn, associated with adverse birth outcomes, as has been found in other studies.[20-24] Paternal ages at the extremes of the range (from both data sources) and lower paternal education (from census data) were associated with all four adverse outcomes. However, such associations were not consistently found for records with "singly missing" paternal data.

Many studies of missing paternal information examined birth registration data

Table 2
Adjusted relative risk (RR) of adverse outcomes associated with paternal data missing from birth registration, by maternal characteristics, singleton births, 2006 Canadian Birth-Census Cohort

	Preterm birth			Small-for-gestational-age birth			Stillbirth			Infant death		
		95% confidence interval			95% confidence interval			95% confidence interval			95% confidence interval	
Maternal characteristics	Adjusted RR	from	to	Adjusted RR	from	to	Adjusted RR	from	to	Adjusted RR	from	to
All singleton births	**1.12**	**0.99**	**1.26**	**1.15***	**1.05**	**1.26**	**1.86***	**1.27**	**2.73**	**1.53***	**1.00**	**2.35**
Age												
Younger than 25	1.08	0.90	1.30	1.15*	1.00	1.32	1.59	0.91	2.78	0.86	0.46	1.60
25 or older	1.16*	1.00	1.35	1.17*	1.03	1.34	2.10*	1.29	3.40	2.31*	1.30	4.10
Education												
Less than secondary graduation	0.98	0.82	1.17	1.14	0.97	1.33	2.03*	1.08	3.82	1.12	0.63	2.00
Secondary graduation or higher	1.19*	1.02	1.39	1.16*	1.03	1.30	1.84*	1.14	2.97	1.84	0.98	3.48
Household income quintile												
Lowest	1.11	0.93	1.32	1.04	0.89	1.21	1.19	0.62	2.28	1.42	0.70	2.88
2 to 5	1.07	0.91	1.25	1.23*	1.09	1.39	2.28*	1.40	3.71	1.53	0.85	2.74
Indigenous origin												
Indigenous	1.15	0.94	1.41	1.11	0.89	1.38	1.71	0.98	2.98	1.07§	0.63	1.83
Not Indigenous	1.10	0.96	1.27	1.15*	1.04	1.28	1.89*	1.13	3.17	1.71§	0.99	2.97
Birthplace												
Not Canada	0.96	0.70	1.30	1.34*	1.10	1.63	x	x	x	2.17	0.55	8.49
Canada	1.12	0.99	1.28	1.10	0.99	1.23	2.03*	1.34	3.06	1.26	0.83	1.93
Marital status												
Not married	1.05	0.92	1.20	1.18*	1.06	1.31	1.65*	1.08	2.51	1.33	0.83	2.11
Married	1.45*	1.05	2.00	1.10	0.83	1.47	2.76	0.86	8.90	2.03	0.77	5.36

x suppressed to meet confidentiality requirements of *Statistics Act*
* significantly different from reference category ($p < 0.05$)
§ not adjusted for maternal birthplace because of small cell sizes
Notes: Reference category is births with paternal data on birth registration. Adjusted for maternal age, education, household income quintile, ethnicity, birthplace, marital status and parity.
Source: 2006 Canadian Birth-Census Cohort Database.

What is already known on this subject?

- Increasingly, perinatal studies are incorporating paternal risk factors.
- Missing paternal data may negatively affect analyses.
- The nature and implications of missing paternal data have not been systematically examined.

What does this study add?

- Missing paternal information from birth registrations and from census results is a marker for increased risk for adverse birth outcomes, over and above maternal characteristics.
- Future studies should aim to determine the extent to which missing paternal information is associated with the absence or limited involvement of the father.

only,[10,11,13,14] whereas the present analysis used birth registrations and census results (even for fathers not on the birth registration). This cross-classification made it possible to capture different patterns of "missing" and to estimate their associations with adverse birth outcomes. Data missing from the birth registration likely indicate absence of the father during pregnancy or at the birth; missing census data likely indicate absence of the father after the child was born. Nonetheless, the risks of the four adverse outcomes did not vary greatly whether "lone mother" status was defined at the child's birth or over a period of up to two years later. Consequently, this study, in part, validates the birth registration criterion as a measure of missing paternal data.

If the parents are unmarried, in all provinces and territories except Quebec, the father must consent to being named on the birth registration. This suggests that missing paternal information on the birth registration would be a more salient marker of risk in Quebec than in the rest of Canada. Associations in the present study were, indeed, stronger in Quebec than elsewhere in Canada for stillbirth and infant mortality. However, this pattern was observed across all four definitions of "missing," and associations with preterm birth and small-for-gestational age birth were similar in Quebec and in the rest of Canada.

The reasons for missing paternal data range from administrative error to rape to emergency obstetric admission.[13] While the associations in this study may plausibly reflect a reduced likelihood of reporting paternal information after an adverse birth outcome, administrative datasets such as the Canadian Birth-Census Cohort do not lend themselves to identifying reasons for "missing."

This analysis has implications for research based on routinely collected registry data or on other administrative data—sources often employed in perinatal epidemiology. Based on these results, in studies of paternal risk factors, missing paternal information should not be deleted in listwise fashion, because it identifies additional risk for adverse

Table 3
Adjusted risk difference (RD) per 100 births for adverse outcomes associated with paternal data missing from birth registration, by maternal characteristics, singleton births, 2006 Canadian Birth-Census Cohort

	Preterm birth			Small-for-gestational-age birth			Stillbirth			Infant death		
	Adjusted	95% confidence interval		Adjusted	95% confidence interval		Adjusted	95% confidence interval		Adjusted	95% confidence interval	
Maternal characteristics	RD	from	to	RD	from	to	RD	from	to	RD	from	to
All singleton births	**0.76**	**-0.10**	**1.62**	**1.23***	**0.35**	**2.11**	**0.39***	**0.08**	**0.70**	**0.22**	**-0.03**	**0.47**
Age												
Younger than 25	0.57	-0.80	1.94	1.48	-0.07	3.03	0.30	-0.13	0.73	0.06	-0.19	0.31
25 or older	1.05	-0.09	2.19	1.37*	0.17	2.57	0.48*	0.05	0.91	0.53*	0.04	1.02
Education												
Less than secondary graduation	0.15	-1.28	1.58	1.44	-0.42	3.30	0.60	-0.11	1.31	0.08	-0.35	0.51
Secondary graduation or higher	1.20*	0.02	2.38	1.27*	0.21	2.33	0.36*	0.01	0.71	0.32	-0.09	0.73
Household income quintile												
Lowest	0.79	-0.60	2.18	0.40	-1.23	2.03	0.09	-0.24	0.42	0.17	-0.20	0.54
2 to 5	0.45	-0.65	1.55	1.84*	0.68	3.00	0.57*	0.10	1.04	0.22	-0.13	0.57
Indigenous origin												
Indigenous	1.25	-0.63	3.13	0.72	-0.79	2.23	0.61	-0.13	1.35	0.05§	-0.42	0.52
Not Indigenous	0.65	-0.35	1.65	1.30*	0.32	2.28	0.38	-0.01	0.77	0.28§	-0.05	0.61
Birthplace												
Not Canada	0.28	-1.64	2.20	3.75*	0.89	6.61	x	x	x	0.47	-0.43	1.37
Canada	0.81	-0.15	1.77	0.77	-0.09	1.63	0.49*	0.12	0.86	0.11	-0.11	0.33
Marital status												
Not married	0.36	-0.66	1.38	1.70*	0.56	2.84	0.35*	0.00	0.70	0.17	-0.12	0.46
Married	2.81	-0.01	5.63	0.81	-1.58	3.20	0.74	-0.30	1.78	0.39	-0.32	1.10

x suppressed to meet confidentiality requirements of *Statistics Act*
* significantly different from reference category ($p < 0.05$)
§ not adjusted for maternal birthplace because of small cell sizes
Notes: Reference category is births with paternal data on birth registration. Adjusted for maternal age, education, household income quintile, ethnicity, birthplace, marital status and parity.
Source: 2006 Canadian Birth-Census Cohort Database.

outcomes, independent of maternal characteristics. Furthermore, in studies of non-paternal risk factors, it may be advisable to control for missing paternal data, which could confound associations between maternal characteristics and perinatal outcomes. Finally, the present study supports the hypothesis that missing paternal information identifies an absent father, which was not directly testable in the Canadian Birth-Census dataset.

Conclusion

Analyses of birth and death registration data linked with the 2006 Canadian census suggest that missing paternal information is a marker for increased risk of adverse birth outcomes, over and above maternal characteristics. This pattern was observed for missing paternal information on the birth registration and in census data up to two years after the child was born. Future studies might explore mechanisms (for example, emergency admission or psychosocial or instrumental support) that may underlie these associations. Research using administrative databases to examine birth outcomes should consider missing paternal data as a potential risk indicator or confounder of other relationships under investigation. ■

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